

# FIG. 1A

gggtgttgta gatatttttc ctttgggaaga aatactgagc accaaggctg ag atg aca 58  
Met Thr  
1

ctg aag tat tta tgg ctg gtg gcc ctc gtg gct cta tac att tca ccc 106  
Leu Lys Tyr Leu Trp Leu Val Ala Leu Val Ala Leu Tyr Ile Ser Pro  
5 10 15

atc cag tct cag aac tgt gtg tat ctg gat cat acc atc ttg gaa aac 154  
Ile Gln Ser Gln Asn Cys Val Tyr Leu Asp His Thr Ile Leu Glu Asn  
20 25 30

atg aaa ctt ctg agc agc atc agg acc acc ttt ccc tta aga tgt cta- 202  
Met Lys Leu Leu Ser Ser Ile Arg Thr Thr Phe Pro Leu Arg Cys Leu  
35 40 45 50

aaa gat atc acg gat ttt gag ttt cct caa gag att ctg ctg tac gtc 250  
Lys Asp Ile Thr Asp Phe Glu Phe Pro Gln Glu Ile Leu Leu Tyr Val  
55 60 65

cag cat gtg aaa aag gac ata aag gca gtc acc tat cat ata tct tct 298  
Gln His Val Lys Lys Asp Ile Lys Ala Val Thr Tyr His Ile Ser Ser  
70 75 80

ctg gcg cta att att ttc agt ctt aaa gac tcc atc tcc ctg gcg aca 346  
Leu Ala Leu Ile Ile Phe Ser Leu Lys Asp Ser Ile Ser Leu Ala Thr  
85 90 95

gag gaa cgc ttg gaa cgt atc aga tcg gga ctt ttc aaa caa gtg cag 394  
Glu Glu Arg Leu Glu Arg Ile Arg Ser Gly Leu Phe Lys Gln Val Gln  
100 105 110

caa gct cga gag tgc atg gta gac gag gag aac aag aac acg gag gag 442  
Gln Ala Arg Glu Cys Met Val Asp Glu Glu Asn Lys Asn Thr Glu Glu  
115 120 125 130

gac agt aca tca caa cat cct cac tca gag ggc ttc aag gca gtc tac 490  
Asp Ser Thr Ser Gln His Pro His Ser Glu Gly Phe Lys Ala Val Tyr  
135 140 145

ctg gaa ttg aac aag tat ttc ttc aga atc aga aag ttc ctg gta aat 538  
Leu Glu Leu Asn Lys Tyr Phe Phe Arg Ile Arg Lys Phe Leu Val Asn  
150 155 160

aag aaa tac agt ttc tgt gcc tgg aag att gtc gtg gtg gaa ata aga 586  
Lys Lys Tyr Ser Phe Cys Ala Trp Lys Ile Val Val Val Glu Ile Arg  
165 170 175

aga tgt ttc agt ata ttt tac aaa cta ctc aac atg aat tgagaatcat 635  
Arg Cys Phe Ser Ile Phe Tyr Lys Leu Leu Asn Met Asn  
180 185 190

ccagcttcaa gcaagaactt agatagaagt tgtgactgct caaatgtccc caagaacgct 695

## FIG. 1B

tgattctaag gctattgcga gtctgctgct acacacttcg gacgcaagac ttttcaagggt 755  
caggggttcaa ggtagtacag tcaaaggaag tcttatgtta agcaaaagaa aaattttcagt 815  
ggaaaagcta gcagaaatgt caacttgtca aaaaaacaac ttatggatta tggcattgac 875  
gttactagca aaaaaaataa aacaaaaaaa aacaaaaa 913

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
2	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	
3	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100		
4	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100			
5	5	6	7	8	9	10	11	12	13	14	15																																																																																									

FIG. 2A

aagcttaatt taacaaaatt ggaaaaacct aaactatact gtgctctggt gacctagcaa 60  
tcaaataatc acagtcattt ggtcaatgtc tatgattaac tcaatgagac aggatgtttg 120  
gctatagcac caggtacaaa aaatatattt tcatgaagga tcaactcoctc ttatgtaata 180  
gatttgggtg agtgagtgag tgagtgagtg catggactca cagcttttgg ctttctgaaa 240  
taccctgcat cagtcttggt atgatgattc cttagtgtg ggatggatca tccaggcatt 300  
taaggtaaca cgatggtaat tctttgtc tttttcaggg aaaaaaaaaa gttatcactt 360  
ccaaagtcgg catagtcacc cgaagtaaaa aaaaaaaaaa aaaaaaaag cctcagaggc 420  
aaaggaaagg ggccgcaacc ttggttaact gtgaaatgac gaatgagaaa actcctcctg 480  
ctgaagatat tcaggtatat aaaggcacat gaaggaaaac tcaaaacatc attgtcatat 540  
acacatcttc tggatttttt agcttgcaaa aaaa atg agc acc aaa cct gat atg 595  
Met Ser Thr Lys Pro Asp Met  
1 5  
att caa aag tgt ttg tgg ctt gag atc ctt atg ggt ata ttc att gct 643  
Ile Gln Lys Cys Leu Trp Leu Glu Ile Leu Met Gly Ile Phe Ile Ala  
10 15 20  
ggc acc cta tcc ctg gac tgt aac tta ctg aac gtt cac ctg aga aga 691  
Gly Thr Leu Ser Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg  
25 30 35  
gtc acc tgg caa aat ctg aga cat ctg agt agt atg agc aat tca ttt 739  
Val Thr Trp Gln Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe  
40 45 50 55  
cct gta gaa tgt cta cga gaa aac ata gct ttt gag ttg ccc caa gag 787  
Pro Val Glu Cys Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu  
60 65 70  
ttt ctg caa tac acc caa cct atg aag agg gac atc aag aag gcc ttc 835  
Phe Leu Gln Tyr Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe  
75 80 85  
tat gaa atg tcc cta cag gcc ttc aac atc ttc agc caa cac acc ttc 883  
Tyr Glu Met Ser Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Phe  
90 95 100  
aaa tat tgg aaa gag aga cac ctc aaa caa atc caa ata gga ctt gat 931  
Lys Tyr Trp Lys Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu Asp  
105 110 115  
cag caa gca gag tac ctg aac caa tgc ttg gag gaa gac gag aat gaa 979  
Gln Gln Ala Glu Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu  
120 125 130 135

## FIG. 2B

aat gaa gac atg aaa gaa atg aaa gag aat gag atg aaa ccc tca gaa	1027
Asn Glu Asp Met Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu	
140 145 150	
gcc agg gtc ccc cag ctg agc agc ctg gaa ctg agg aga tat ttc cac	1075
Ala Arg Val Pro Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His	
155 160 165	
agg ata gac aat ttc ctg aaa gaa aag aaa tac agt gac tgt gcc tgg	1123
Arg Ile Asp Asn Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp	
170 175 180	
gag att gtc cga gtg gaa atc aga aga tgt ttg tat tac ttt tac aaa	1171
Glu Ile Val Arg Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys	
185 190 195	
ttt aca gct cta ttc agg agg aaa taaggtatat ttttggaatt aaaattcctt	1225
Phe Thr Ala Leu Phe Arg Arg Lys	
200 205	
ttccctcoga aatctctttc tctttctcct cctccatctt ctttttaagg attggtgtgc	1285
tgtcctgtaa gctgtctc agttggactg gtagcctcgg aacatcaggg acactcacct	1345
ctctaaggag aggtaatgcc aaccatcctc agggtgacca agagtctcct tagaaagtct	1405
ttaagacatt tttaaaggaa taagattccc tctccgtctt cttctattct ctcttgctct	1465
tttctgtggc cattttgaaa gagctttgct atatatacca cctgtggact tcaccaagac	1525
aatggctaga ggatagggag cagagaatgt tgcaaaatgg taacatttca atgacttaac	1585
tgttttgctg ccaagggtgc ttatcctatg aaaattcagc acattaaaag agcttataca	1645
tgctccctag agtcaatact cttgcatttt cccctcctg ctggggggga aaaaggttga	1705
catttctggc ccatttcctt ctcagcttgg tttgtttgaa ttgatgcttg tggaatggta	1765
tttcattact ttaagagtga agatccatag tgaaattgga tggatggttg aattagacga	1825
ccattaagct t	1836

FIG. 3

	1		50
huIFN-L	MSTKPDMIQK	CLWLEILMGI	FIAGTSLSDC NLLNVHLRRV TWQNLRHLSS
raIFN-L	~~~~~MTLK	YLWLVALVAL	YISPIQSQNC ....VYLDHT ILENMKLLSS
huIFN- $\beta$	~~~~~MTNK	CLLQIALLLC	FSTTALSMSY NLLGFLQRSS NFQCQKLLWQ
cons	-----MT-K	CLWL-AL---	FI---LS--C NLL-V-LR-- --QN-KLLSS
	51		100
huIFN-L	MSNSFPVECL	RENIAFELPQ	EFLQYTQPMK RDIKKAFYEM SLQAFNIFS.
raIFN-L	IRTTFPLRCL	KDITDFEFPQ	EILLYVQHVK KDIKAVTYHI SSLALIIFSL
huIFN- $\beta$	LNGRLEY.CL	KDRMNFDIPE	EIKQLQQFQK EDAALTIYEM LQNIFAIFRQ
cons	----FP--CL	KD---FE-PQ	EILQY-Q--K -DIK---YEM S--AF-IFS-
	101		150
huIFN-L	QHTFKYWKER	HLKQIQIGLD	QQAAYLNQCL EEDENENEDM KEMKENEMKP
raIFN-L	KDSISLATEE	RLERIRSGLF	KQVQQARECM VDEENKNTE. .EDSTSQHPH
huIFN- $\beta$	DSSSTGWNET	IVENLLANVY	HQINHLKTVL .EEKLEKEDF TRGK.....
cons	--S---W-E-	-LE-I--GL-	-Q---L--CL -EEENENED- -E-K-----
	151		200
huIFN-L	SEARVPQLSS	LELRRYFHRI	DNFLKEKKYS DCAWEIVRVE IRRCLYYFYK
raIFN-L	SEGF..KAVY	LELNKYFFRI	RKFLVNKKYS FCAWKIVVVE IRRCFISIFYK
huIFN- $\beta$	.....LMSS	LHLKRYYGRI	LHYLKAKEYS HCAWTIVRVE ILRNFYFINR
cons	SE-----SS	LEL-RYF-RI	--FLK-KKYS -CAW-IVRVE IRRCFY-FYK
	201		
huIFN-L	FTALFRRK		
raIFN-L	LLNMN~~~		
huIFN- $\beta$	LTGYLRN~		
cons	LT---R--		

# FIG. 4

cat atg tgt gta tat ctc gat cat act atc ttg gag aat atg aaa ctt	48
Met Cys Val Tyr Leu Asp His Thr Ile Leu Glu Asn Met Lys Leu	
1 5 10 15	
ctg agc agc atc cgt acc acc ttt cct ctg cgt tgt ctg aaa gat atc	96
Leu Ser Ser Ile Arg Thr Thr Phe Pro Leu Arg Cys Leu Lys Asp Ile	
20 25 30	
acg gat ttt gag ttt cct caa gag att ctg ctg tac gtc cag cat gtg	144
Thr Asp Phe Glu Phe Pro Gln Glu Ile Leu Leu Tyr Val Gln His Val	
35 40 45	
aaa aag gac ata aag gca gtc acc tat cat ata tct tct ctg gcg cta.	192
Lys Lys Asp Ile Lys Ala Val Thr Tyr His Ile Ser Ser Leu Ala Leu	
50 55 60	
att att ttc agt ctt aaa gac tcc atc tcc ctg gcg aca gag gaa cgc	240
Ile Ile Phe Ser Leu Lys Asp Ser Ile Ser Leu Ala Thr Glu Glu Arg	
65 70 75	
ttg gaa cgt atc aga tgc gga ctt ttc aaa caa gtg cag caa gct cga	288
Leu Glu Arg Ile Arg Ser Gly Leu Phe Lys Gln Val Gln Gln Ala Arg	
80 85 90 95	
gag tgc atg gta gac gag gag aac aag aac acg gag gag gac agt aca	336
Glu Cys Met Val Asp Glu Glu Asn Lys Asn Thr Glu Glu Asp Ser Thr	
100 105 110	
tca caa cat cct cac tca gag ggc ttc aag gca gtc tac ctg gaa ttg	384
Ser Gln His Pro His Ser Glu Gly Phe Lys Ala Val Tyr Leu Glu Leu	
115 120 125	
aac aag tat ttc ttc aga atc aga aag ttc ctg gta aat aag aaa tac	432
Asn Lys Tyr Phe Phe Arg Ile Arg Lys Phe Leu Val Asn Lys Lys Tyr	
130 135 140	
agt ttc tgt gcc tgg aag att gtc gtg gtg gaa att cgt cgt tgt ttc	480
Ser Phe Cys Ala Trp Lys Ile Val Val Val Glu Ile Arg Arg Cys Phe	
145 150 155	
agt att ttt tac aaa ctg ctg aac atg aat taatggatcc	520
Ser Ile Phe Tyr Lys Leu Leu Asn Met Asn	
160 165	

FIG. 5

cat atg tgt gta tat ctc gat cat act atc ttg gag aat atg aaa ctt	48
Met Cys Val Tyr Leu Asp His Thr Ile Leu Glu Asn Met Lys Leu	
1 5 10 15	
ctg agc agc atc cgt acc acc ttt cct ctg cgt tgt ctg aaa gat atc	96
Leu Ser Ser Ile Arg Thr Thr Phe Pro Leu Arg Cys Leu Lys Asp Ile	
20 25 30	
acg gat ttt gag ttt cct caa gag att ctg ctg tac gtc cag cat gtg	144
Thr Asp Phe Glu Phe Pro Gln Glu Ile Leu Leu Tyr Val Gln His Val	
35 40 45	
aaa aag gac atc aag gca gtc acc tat cat atc tct tct ctg gcg ctg	192
Lys Lys Asp Ile Lys Ala Val Thr Tyr His Ile Ser Ser Leu Ala Leu	
50 55 60	
att att ttc agt ctt aaa gac tcc atc tcc ctg gcg aca gag gaa cgc	240
Ile Ile Phe Ser Leu Lys Asp Ser Ile Ser Leu Ala Thr Glu Glu Arg	
65 70 75	
ttg gaa cgt atc cgt tct ggt ctt ttc aaa caa gtg cag caa gct cgt	288
Leu Glu Arg Ile Arg Ser Gly Leu Phe Lys Gln Val Gln Gln Ala Arg	
80 85 90 95	
gag tgc atg gta gac gag gag aac aag aac acg gag gag gac agt aca	336
Glu Cys Met Val Asp Glu Glu Asn Lys Asn Thr Glu Glu Asp Ser Thr	
100 105 110	
tca caa cat cct cac tca gag ggc ttc aag gca gtc tac ctg gaa ttg	384
Ser Gln His Pro His Ser Glu Gly Phe Lys Ala Val Tyr Leu Glu Leu	
115 120 125	
aac aag tat ttc ttc cgt atc cgt aag ttc ctg gta aat aag aaa tac	432
Asn Lys Tyr Phe Phe Arg Ile Arg Lys Phe Leu Val Asn Lys Lys Tyr	
130 135 140	
agt ttc tgt gcc tgg aag att gtc gtg gtg gaa att cgt cgt tct ttc	480
Ser Phe Cys Ala Trp Lys Ile Val Val Val Glu Ile Arg Arg Ser Phe	
145 150 155	
agt att ttt tac aaa ctg ctg aac atg aat taatggatcc	520
Ser Ile Phe Tyr Lys Leu Leu Asn Met Asn	
160 165	

FIG. 6

tctagaaagg aggaataaca t atg tgt aac ctg ctg aac gtt cac ctg cgt	51
Met Cys Asn Leu Leu Asn Val His Leu Arg	
1 5 10	
cgt gtt acc tgg caa aat ctg aga cat ctg agt agt atg agc aat tca	99
Arg Val Thr Trp Gln Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser	
15 20 25	
ttt cct gta gaa tgt cta cga gaa aac ata gct ttt gag ttg ccc caa	147
Phe Pro Val Glu Cys Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln	
30 35 40	
gag ttt ctg caa tac acc caa cct atg aag agg gac atc aag aag gcc	195
Glu Phe Leu Gln Tyr Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala	
45 50 55	
ttc tat gaa atg tcc cta cag gcc ttc aac atc ttc agc caa cac acc	243
Phe Tyr Glu Met Ser Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr	
60 65 70	
ttc aaa tat tgg aaa gag aga cac ctc aaa caa atc caa ata gga ctt	291
Phe Lys Tyr Trp Lys Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu	
75 80 85 90	
gat cag caa gca gag tac ctg aac caa tgc ttg gag gaa gac gag aat	339
Asp Gln Gln Ala Glu Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn	
95 100 105	
gaa aat gaa gac atg aaa gaa atg aaa gag aat gag atg aaa ccc tca	387
Glu Asn Glu Asp Met Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser	
110 115 120	
gaa gcc agg gtc ccc cag ctg agc agc ctg gaa ctg agg aga tat ttc	435
Glu Ala Arg Val Pro Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe	
125 130 135	
cac agg ata gac aat ttc ctg aaa gaa aag aaa tac agt gac tgt gcc	483
His Arg Ile Asp Asn Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala	
140 145 150	
tgg gag att gtc cga gtg gaa atc cgt cgt tgc ctg tac tac ttt tac	531
Trp Glu Ile Val Arg Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr	
155 160 165 170	
aaa ttt acc gct ctg ttc cgt cgt aaa taatggatcc	568
Lys Phe Thr Ala Leu Phe Arg Arg Lys	
175	

[illegible][illegible]

FIG. 8

cat atg ctg gac tgt aac ctg ctg aac gtt cac ctg cgt cgt gtt acc	48
His Met Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr	
1 5 10 15	
tggtg caa aat ctg aga cat ctg agt agt atg agc aat tca ttt cct gta	96
Trp Gln Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val	
20 25 30	
gaa tgt cta cga gaa aac ata gct ttt gag ttg ccc caa gag ttt ctg	144
Glu Cys Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu	
35 40 45	
caa tac acc caa cct atg aag agg gac atc aag aag gcc ttc tat gaa	192
Gln Tyr Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu	
50 55 60	
atg tcc cta cag gcc ttc aac atc ttc agc caa cac acc ttc aaa tat	240
Met Ser Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Phe Lys Tyr	
65 70 75 80	
tggtg aaa gag aga cac ctc aaa caa atc caa ata gga ctt gat cag caa	288
Trp Lys Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu Asp Gln Gln	
85 90 95	
gca gag tac ctg aac caa tgc ttg gag gaa gac gag aat gaa aat gaa	336
Ala Glu Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu	
100 105 110	
gac atg aaa gaa atg aaa gag aat gag atg aaa ccc tca gaa gcc agg	384
Asp Met Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg	
115 120 125	
gtc ccc cag ctg agc agc ctg gaa ctg agg aga tat ttc cac agg ata	432
Val Pro Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile	
130 135 140	
gac aat ttc ctg aaa gaa aag aaa tac agt gac tgt gcc tgg gag att	480
Asp Asn Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile	
145 150 155 160	
gtc cga gtg gaa atc cgt cgt tgc ctg tac tac ttt tac aaa ttt acc	528
Val Arg Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr	
165 170 175	
gct ctg ttc cgt cgt aaa taatggatcc	556
Ala Leu Phe Arg Arg Lys	
180	